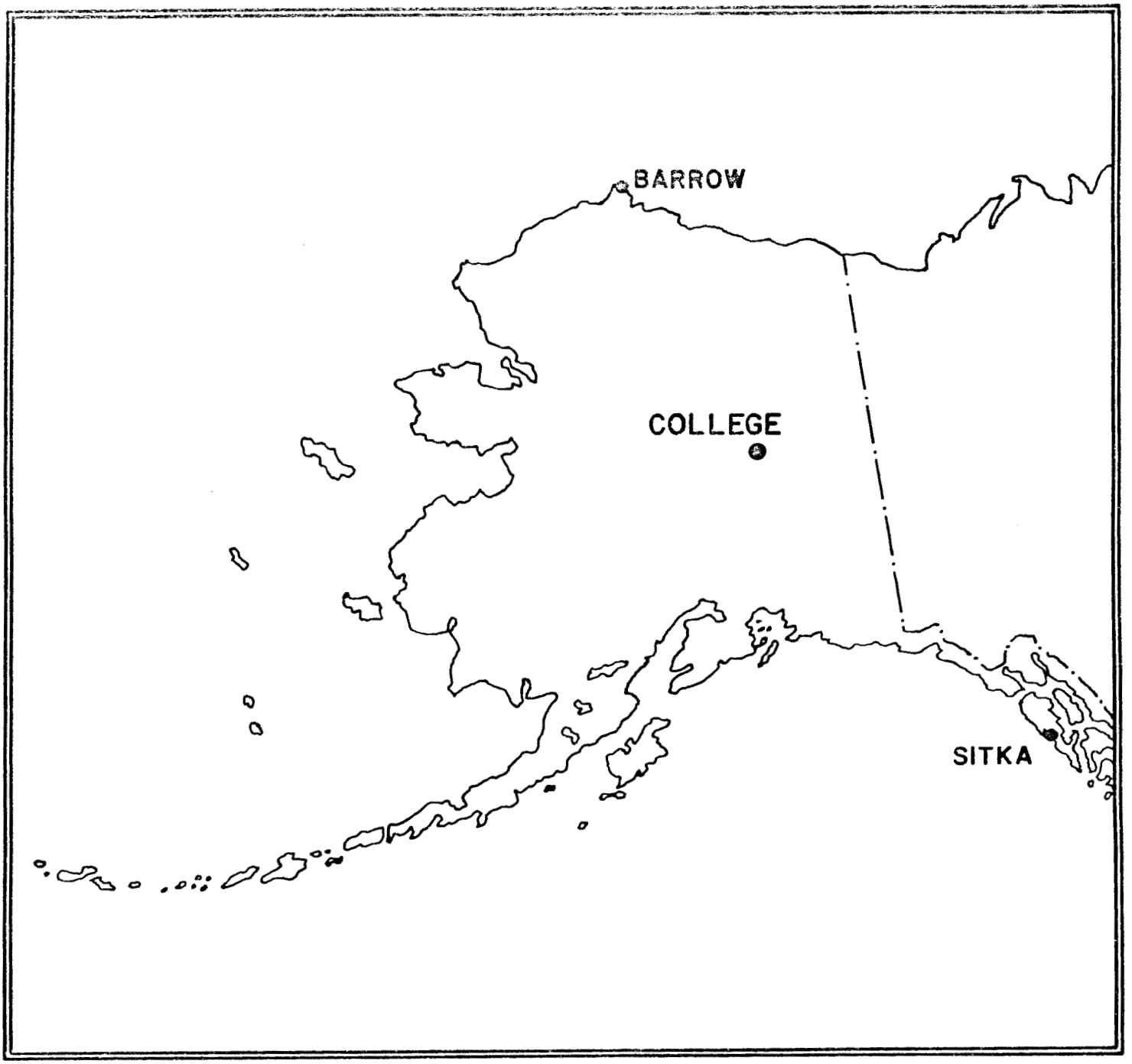
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

JULY 1979 OPEN FILE REPORT 79-300G



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THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY WITH THE ASSISTANCE OF OBSERVATORY STAFF MEMBERS J.E. PAPP, E.A. SAUTER, AND S.P. TILTON, AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF ELECTROMAGNETISM AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

INTRODUCTION

The preliminary geomagnetic data included here is made available to scientific personnel and organizations, as part of a cooperative effort and on a data exchange basis because of the early need by some users. To avoid delay, all of the data is copied from original forms processed at the observatory; therefore it should be regarded as preliminary. Inquiries about this report or about the College Observatory should be addressed to:

Chief, College Observatory
U.S. Geological Survey
Yukon Drive on West Ridge
Fairbanks, Alaska 99701

Requests for copies of the magnetograms except for the current month should be addressed to:

World Data Center A-NOAA
Environmental Data Service
Boulder, Colorado 80302

OBSERVATORY LOCATION

The College Observatory, operated by the U. S. Geological Survey, is located at the University of Alaska, Fairbanks, Alaska. It is near the Auroral Zone and the northern limit of the world's greatest earthquake belt, the circum-Pacific Seismic belt. Although the observatory's basic operation is in geomagnetism and seismology, it cooperates with other scientists and organizations in areas where the facility and personnel can be of service.

The observatory is one of three operated by the USGS in Alaska. The others are located at Barrow and Sitka.

The position of the observatory site is:

Geographic latitude.....64°51.6'N
Geographic longitude..... 147°50.2'W
Geomagnetic latitude.....+64.6°
Geomagnetic longitude.....+256.5°
Elevation.....200 meters

GEOMAGNETIC DATA

Normal, Storm, and Rapid Run magnetograms and appropriate calibration data are processed daily at the observatory and are available for analysis or copying. Also available are mean hourly scalings, K-Indices, selected magnetic phenomena reports, and on a real-time basis are recordings from a 3-component fluxgate magnetometer and F-component proton magnetometer.

Magnetic Activity

The K-Index. The K-Index is a logarithmic measurement of the range of the most disturbed component (D or H) of the geomagnetic field for eight intervals beginning 0000-0300, 0300-0600...2100-2400 UT. It is a measure of the difference between the highest and lowest deviation from a smooth curve to be expected for a component on a magnetically quiet day, within a three hour interval.

The Equivalent Daily Amplitude, AK. The K-Index is converted into an equivalent range, ak, which is near the center of the limiting gamma ranges for a given K. The average of the eight values is called equivalent daily amplitude AK. The unit 10γ has been chosen so as not to give the illusion of an accuracy not justified.

The schedule for converting gamma range to K, and K to ak is as follows:

Gamma Range	K - Index	ak*
0 < 25	0	0
25 < 50	1	3
50 < 100	2	7
100 < 200	3	15
200 < 350	4	27
350 < 600	5	48
600 <1000	6	80
1000 <1650	7	140
1650 <2500	8	240
2500+	9	400 (10γ)

The Magnetic Daily Character Figure, C. To each Universal day a character is assigned on the basis C=0, if it is quiet; C=1 if it is moderately disturbed; C=2 if it is greatly disturbed. The method used to assign characters at the College Observatory is based on AK as follows:

AK Range	C
0≈11	0
11≈50	1
50+	2

Routine assignment of C was discontinued at College on January 1, 1976.

Selected Phenomena & Outstanding Magnetic Effects

Prior to January 1, 1976, the Normal & Rapid Run records were reviewed at the observatory for selected magnetic phenomena and the events identified were forwarded to the IUGG Commission on Magnetic Variations and Disturbances. This was discontinued on January 1, 1976, but a report on Outstanding Magnetic Effects is prepared monthly for this report.

Principal Magnetic Storms

Gradual and sudden commencement magnetic disturbances with at least one K-Index of 5 or greater, which are believed to be part of a world-wide disturbance, are classified as principal magnetic storms. The time of the storm beginning and ending; direction and amplitude of sudden commencements; period of maximum activity; and storm range are reported. Monthly reports of these data are forwarded to the World Data Center A in Boulder, Colorado.

Magnetogram Hourly Scalings

Magnetogram hourly scalings are averages for successive periods of one hour for the D, H, and Z elements. The value in the column headed "01" is the average for the hour beginning 0000 and ending 0100. Note that the values on the scaling sheets are in tenths of mm with the decimal point omitted. The user of these scalings should keep in mind that the tabular values are hourly means and if he is interested in the detailed morphology of the magnetic field, he should refer directly to the magnetograms.

Magnetograms

The normal magnetograms in this report are reproduced at about one-third the size of the originals. Preliminary base-line values and scale values adopted for use with the original magnetograms are included. For days when the magnetic field is too disturbed for the Normal magnetogram to be readable, Storm magnetograms are reproduced.

Absolutes, Base-lines, and Scale Values

To determine the absolute value of the magnetic field from the hourly means or from point scalings the following equations should be used:

$D=B_D+d\cdot S_D$; $H=B_H+h\cdot S_H$; $Z=B_Z+z\cdot S_Z$

where D, H, and Z are absolute values;
B_D, B_H and B_Z are base-line values;
S_D, S_H and S_Z are scale values;
and d, h, and z are scalings in millimeters.

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: JULY 1979

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 7-1-79	2400 U.T., 7-31-79	1.0'/mm	3.8 γ/mm	27° 47.2' E
H	0000 U.T., 7-1-79	2400 U.T., 7-31-79	7.8 γ/mm		12771 γ
Z	0000 U.T., 7-1-79	2400 U.T., 7-31-79	7.3 γ/mm		55165 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 7-1-79	2400 U.T., 7-31-79	7.8'/mm	29.7 γ/mm	23° 48.5' E
H	0000 U.T., 7-1-79	2400 U.T., 7-31-79	44.0 γ/mm		11527 γ
Z	0000 U.T., 7-1-79	2400 U.T., 7-31-79	48.6 γ/mm		54018 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE
D			
H			
Z			

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
28° 10.1' E	13037 γ	55376 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: JULY 2, 3, 5, 10, 11, 12, 22, 24, 25, 31

NOAA FORM 76-133 (9-72)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

OBSERVATORY: COLLEGE, ALASKA

MONTH AND YEAR: JULY 1979

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	1	3	2	4	4	2	1	0	17	11
2	2	1	0	0	0	0	0	0	03	01
3	0	0	2	3	3	3	2	2	15	08
4	3	4	5	2	1	2	1	2	20	15
5	1	2	2	2	2	3	2	2	16	08
6	1	2	2	5	4	2	4	3	23	18
7	3	3	4	3	6	7	3	1	30	39
8	3	3	3	3	4	4	2	1	23	16
9	2	2	1	2	4	3	1	1	16	09
10	2	1	1	1	1	1	2	1	10	04
11	1	1	3	2	0	1	2	1	11	05
12	1	1	0	1	1	3	2	2	11	05
13	4	3	3	4	6	5	4	2	31	31
14	2	1	1	2	3	1	3	3	16	09
15	5	4	4	5	4	4	2	2	30	27
16	3	3	3	2	1	2	2	2	18	10
17	3	4	2	4	5	2	2	3	25	19
18	3	4	5	5	3	2	2	2	26	22
19	3	3	2	1	3	1	2	2	17	09
20	2	3	3	5	5	4	3	3	28	24
21	3	3	2	4	3	3	2	2	22	14
22	2	2	2	1	1	2	2	1	13	06
23	2	3	2	2	1	2	2	2	16	08
24	2	1	1	0	1	0	0	1	06	02
25	2	3	1	0	0	0	0	0	06	03
26	0	1	3	3	2	2	3	3	17	10
27	4	4	2	2	3	3	3	2	23	15
28	4	3	1	0	1	2	1	2	14	08
29	2	3	4	4	4	4	4	3	28	22
30	3	3	2	2	5	3	2	1	21	15
31	0	2	1	0	0	0	1	0	04	02

TIME SCALE ON MAGNETOGRAMS: 20 mm/hr

SUDDEN COMMENCEMENTS

d	h	m

POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)

BEGIN d	h	m	END d	h	m

K SCALE USED:

	D	H	Z	
LOWER LIMIT FOR K = 9.....	683.8	321.7		(mm)
CURRENT SCALE VALUE.....	3.75	7.79		(γ/mm)
LOWER LIMIT FOR K = 9	2560	2510		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED JOHN B. TOWNSHEND, CHIEF, COLLEGE OBSERVATORY
OBSERVER IN CHARGE

NOAA FORM 76-133 SUPERSEDES C&GS FORM 815

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-761-857

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY: COLLEGE, ALASKA

MONTH: JULY

YEAR: 1979

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
06	1929	ssc*	
20	00XX	pc4	
22	20XX	pc3, pc4	
24	13XX	pi2	
26	1833	si	
26	22XX	b	Positive on H.
28	01XX	b	Positive on H.
28	15XX	pc5	

IDENTIFIED BY: JEP

VERIFIED BY: JBT

1. NATURE OF PHENOMENON: ssc, ssc*, si, si*, b, bp, bs, bps, pc1, pc2 - - - pc5, pg, pi 1, pi 2, sfe.

NOAA FORM 86-500
(11/73)

PRINCIPAL MAGNETIC STORMS

WDC-A FOR SOLAR-TERRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80302 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

JULY 1979

Obs. 2 letter IAGA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End	
		day	hr min (UT)	type	D(')	H(γ)	Z(γ)	day	(3 hr - period)	K	D(')	H(γ)	Z(γ)	day	hr
CO	64.6 N	06	1929	s.c.*	-22	-172	-15	07	6	7	139	1360	500	07	21

NOAA FORM 76-106 (3-72)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150W M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	72	JUL	D

C	Q or S	Ten Q	Hr Day	01	02	03	04	05	06	07	08	09	10	11	12	Hr Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	115	101	135	139	146	164	163	158	153	151	178	169	01	217	257	287	340	383	394	391	358	260	217	172	137	5185
			02	114	118	147	185	197	212	211	207	204	212	207	217	02	229	247	295	338	371	399	390	352	314	258	213	171	5808
			03	144	143	153	163	181	193	186	182	158	212	173	199	03	248	197	273	371	493	449	373	304	331	272	142	120	5660
			04	118	148	181	183	99	30	125*	216	229	199	184	168	04	165	180	244	278	305	345	303	300	283	190	155	163	4791
			05	162	176	207	219	230	248	241	223	189	190	198	164	05	154	187	232	269	312	395	348	353	240	225	187	164	5513
			06	159	155	158	164	166	200	195	244	209	118	153	117	06	201	245	289	334	364	369	344	354	219	157	166	213	5293
			07	236	79	150	180	177	181	195	211	185	164	182	202	07	223	132	410*	647*	600*	483	429	384	282	220	217	181	6350
			08	143	135	138	177	204	217	199	178	158	169	172	182	08	183	200	246	321	427	421	390	337	323	287	232	185	5624
			09	142	128	121	152	194	233	236	244	219	203	220	195	09	211	224	295	316	384	375	354	359	329	292	265	205	5896
			10	159	126	136	172	208	242	259	258	237	214	205	216	10	224	214	246	298	359	401	374	335	296	201	169	125	5674
			11	117	108	125	158	196	242	243	191	235	174	189	185	11	199	221	267	313	353	382	372	357	306	233	178	147	5491
			12	137	137	155	191	212	208	221	204	196	196	186	208	12	230	276	307	368	348	415	385	269	270	210	171	167	5667
			13	141	71	84	97	117	86	194	215	194	193	210	155	13	228	245	561*	434*	376	444	408	306	313	245	211	186	5714
			14	172	159	122	172	183	210	206	216	224	233	227	253	14	232	267	302	290	350	345	350	424	218	198	264	284	5901
			15	170	109	94	95	159	108	155	186	149	235	159	232	15	223	242	265	334	302	253	345	344	244	244	241	149	5037
			16	136	122	79	154	161	207	187	170	175	172	196	209	16	219	226	271	314	337	380	360	359	347	231	271	241	5524
			17	177	130	111	73	202	183	216	198	209	160	217	213	17	169	289	259	278	331	349	351	348	311	377	243	182	5576
			18	148	101	147	138	129	133	79*	137	198	204	162	111	18	249	243	251	273	313	331	311	314	295	250	197	204	4918
			19	198	177	144	129	208	210	200	236	204	205	221	216	19	181	188	220	246	292	339	338	342	303	333	176	151	5457
			20	154	154	146	135	139	197	176	174	174	77	100	219	20	255	296	320	325	359	426	387	396	358	319	212	151	5649
			21	175	160	143	124	143	163	252	229	201	203	192	196	21	201	226	261	283	305	327	334	339	337	218	139	107	5261
			22	99	126	122	178	199	218	212	197	208	205	207	209	22	227	262	300	334	369	390	410	325	283	216	164	137	5591
			23	107	108	133	162	142	236	261	232	204	189	195	194	23	212	223	261	343	428	442	418	405	311	157	140	142	5645
			24	115	135	137	167	168	177	187	176	188	191	193	183	24	192	287	317	343	374	418	408	343	268	199	154	102	5422
			25	125	132	137	146	146	207	198	198	206	214	223	213	25	214	233	256	277	313	356	353	324	274	215	172	157	5289
			26	145	153	175	182	188	197	199	212	153	133	170	175	26	233	303	360	356	431	437	477	364	342	325	227	213	6150
			27	192	277	149	214	177	182	199	202	213	196	194	164	27	230	220	257	318	389	420	396	349	314	249	185	152	5838
			28	143	157	204	212	175	168	193	208	209	213	217	224	28	241	258	282	313	327	367	391	372	327	283	237	196	5917
			29	161	158	147	165	148	167	161	141	197	178	234	264	29	301	252	296	239	404	385	320	347	271	234	197	151	5518
			30	146	165	156	167	183	214	192	218	208	201	252	213	30	209	329	198	297	317	319	347	314	301	247	212	189	5594
			31	182	183	192	222	238	254	247	252	238	204	200	197	31	167	162	188	218	249	286	296	303	289	248	201	167	5403

SCALED BY	SPT, PEF
CHECKED BY	JEP, SPT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated

[ ] Significant portion of hour interpolated.

[ ] No record; or no values available because of faulty record.

[ ] Scaling uncertain because of magnetic storm.

< > Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

* Derived from Storm Mgph., converted to Normal Mgph.

MONTHLY SUM	172362
MONTHLY MEAN	232
DATES WITH GAPS:	

☆ U.S. G.P.O. 1973-789-571/932 REG. #6

NOAA FORM 76-106 (1-72)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

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OBSV.	YEAR	MONTH	ELEMENT
CO	72	JUL	H

C	Q or S	Ten Q	Hr Dy	01	02	03	04	05	06	07	08	09	10	11	12	Hr Dy	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	338	341	327	360	413	432	432	428	430	417	374	332	01	187	333	373	359	326	334	307	283	273	289	302	320	8310
			02	330	350	380	350	351	349	357	363	360	361	360	362	02	368	373	376	383	378	353	337	333	314	305	303	302	8398
			03	318	336	340	353	352	356	382	390	433	412	441	410	03	330	340	320	263	280	326	365	350	299	295	289	320	8300
			04	349	434	405	444	567	475	450	293	352	364	337	327	04	342	351	378	372	339	342	331	311	327	328	322	301	8841
			05	303	319	320	327	344	371	331	339	385	395	388	388	05	383	355	331	403	376	359	355	319	348	305	302	299	8345
			06	320	327	329	351	358	374	461	460	435	355	155	68	06	154	265	226	319	342	372	366	232	248	320	338	337	7512
			07	420	380	418	511	530	420	390	497	510	418	356	343	07	313	212	-335*	-731*	-250*	273	327	392	345	328	324	328	6819
			08	315	341	369	324	381	382	373	422	451	361	323	372	08	367	328	208	117	252	307	332	334	309	298	297	305	7868
			09	308	315	353	357	350	361	373	369	350	343	349	350	09	299	207	139	225	293	322	372	359	338	303	286	291	7612
			10	291	317	363	358	363	345	342	359	362	366	364	368	10	373	359	369	357	351	378	385	328	318	290	297	309	8312
			11	318	338	340	358	377	362	362	427	437	392	352	364	11	358	358	359	372	374	358	342	314	267	274	276	298	8377
			12	327	345	357	357	352	370	350	351	357	362	367	352	12	350	358	359	370	335	266	291	312	294	283	285	314	8064
			13	326	397	534	541	483	567	494	383	369	320	284	265	13	137	83	-193*	-108*	119	142	159	336	332	298	310	301	6879
			14	305	310	359	348	350	345	356	350	351	368	374	360	14	332	274	294	353	335	359	344	255	240	276	339	364	7941
			15	405	511	521	504	392	426	421	414	392	356	179	311	15	320	248	173	177	210	325	299	311	280	303	332	314	8124
			16	364	363	483	355	308	306	364	445	416	377	362	337	16	346	353	337	341	349	309	321	304	279	289	319	362	8389
			17	344	356	383	486	538	389	327	338	336	347	378	336	17	289	-29	171	336	341	375	362	334	311	299	291	327	7965
			18	339	391	334	339	449	480	447	443	399	343	316	206	18	233	301	339	351	349	337	342	303	279	312	337	363	8332
			19	420	325	348	416	413	348	345	361	370	358	339	338	19	309	255	302	336	352	338	334	318	295	279	291	287	8097
			20	308	319	338	385	385	418	393	401	466	185	192	164	20	60	43	259	356	375	235	228	290	321	295	292	321	7029
			21	390	331	372	440	460	458	373	350	338	341	247	360	21	326	315	264	293	348	353	324	301	268	291	295	280	8118
			22	299	333	342	345	377	370	373	382	397	376	351	343	22	337	352	348	343	320	338	308	310	274	262	261	280	8021
			23	278	306	326	346	428	413	383	347	348	337	333	363	23	353	352	336	312	343	348	340	294	260	258	272	303	7979
			24	361	405	416	418	391	395	376	378	363	344	351	348	24	337	319	328	333	338	325	310	290	272	268	281	295	8242
			25	318	351	377	418	416	332	329	346	347	348	347	358	25	358	353	358	359	348	338	320	290	266	258	264	277	8076
			26	301	326	342	339	361	377	389	392	464	453	381	350	26	300	294	304	307	308	307	265	249	271	227	294	385	7986
			27	592	723	774	488	328	288	297	308	294	312	326	347	27	340	350	242	257	273	315	323	328	304	295	287	279	8670
			28	319	402	532	349	302	306	301	312	321	321	322	322	28	326	331	323	330	345	332	331	318	310	307	313	303	7978
			29	332	328	338	325	348	359	385	480	429	438	402	293	29	123	249	276	291	201	349	333	338	332	318	325	302	7894
			30	301	339	308	338	344	340	342	360	363	350	377	345	30	295	20	110	272	278	258	302	303	311	317	290	300	7163
			31	318	320	327	321	348	327	329	338	342	347	343	347	31	336	329	329	340	334	336	330	318	306	303	308	312	7888

SCALED BY	SPT, PEF
CHECKED BY	JEP, SPT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated
[ ] Significant portion of hour interpolated.
[ ] No record; or no values available because of faulty record.
[ ] Scaling uncertain because of magnetic storm.
< > Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

* Derived from 5Hour Mgph., converted to Normal Mgph.

MONTHLY SUM	247529
MONTHLY MEAN	333
DATES WITH GAPS:	

☆ U.S. G.P.O. 1973-769-571/932 REG. #6

NOAA FORM 76-106
(1-72)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MAGNETOGRAM HOURLY SCALINGS

(UNIVERSAL TIME)

Values are in tenths of mm, and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (150W M.T.) is hour 11 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	79	JUL	H

C	Q or S	Ten Q	Hr / Day	01	02	03	04	05	06	07	08	09	10	11	12	Hr / Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	299	300	307	297	308	338	339	350	342	311	308	385	01	241	182	261	282	281	275	286	279	254	260	267	278	7030
			02	278	298	345	349	330	312	294	289	287	284	282	287	02	284	289	295	297	295	291	279	272	265	260	259	260	6981
			03	267	272	275	277	285	282	277	282	272	305	289	320	03	261	242	248	236	226	207	229	259	285	275	283	301	6455
			04	323	348	387	387	362	231	317	345	317	306	292	291	04	301	303	318	317	307	306	309	316	302	291	284	293	7553
			05	297	308	318	317	312	332	327	308	290	286	275	265	05	289	275	282	321	311	274	252	264	244	270	269	267	6953
			06	272	286	291	299	307	321	332	357	325	266	322	262	06	289	234	241	258	280	292	297	304	191	202	263	293	6784
			07	350	362	403	448	438	402	375	373	335	340	321	316	07	303	342	431*	263*	184*	105	239	247	259	270	289	290	7685
			08	294	291	303	331	353	349	316	321	288	261	293	261	08	289	282	268	307	245	255	241	257	274	275	277	290	6942
			09	290	291	297	312	319	331	325	314	296	290	261	244	09	226	183	189	197	251	269	272	281	273	271	272	279	6533
			10	298	296	300	311	317	316	312	307	298	291	292	283	10	265	259	285	294	286	290	287	288	281	268	264	266	6954
			11	288	298	295	289	303	336	320	312	339	283	300	299	11	303	305	308	307	308	298	284	293	291	284	284	292	7219
			12	302	306	303	300	297	289	293	282	283	284	283	286	12	277	275	269	267	254	178	168	166	205	225	247	256	6297
			13	289	324	411	432	423	388	426	375	334	308	287	253	13	266	220	305*	104*	74	89	50	170	234	240	273	289	6564
			14	296	300	308	338	312	300	289	289	289	289	295	266	14	249	242	239	270	290	282	280	285	196	184	239	290	6617
			15	323	335	331	340	374	347	329	254	304	276	274	248	15	268	248	185	129	97	183	266	260	245	271	299	319	6505
			16	311	333	327	370	354	320	304	320	319	307	317	293	16	299	297	299	294	292	294	267	254	249	251	287	308	7268
			17	350	327	329	314	364	332	342	301	297	269	263	198	17	248	261	181	206	256	286	284	281	271	297	283	311	6851
			18	327	357	324	317	344	352	196	279	354	321	270	201	18	144	168	247	283	283	292	291	289	283	305	324	328	6879
			19	346	322	296	322	382	338	312	322	287	301	294	278	19	236	197	212	251	304	311	296	292	280	294	281	276	7030
			20	281	277	292	299	322	361	337	342	302	284	336	474	20	399	447	288	292	290	265	129	226	238	254	264	276	7277
			21	308	312	319	307	352	358	339	322	296	257	130	251	21	274	260	249	242	269	296	308	300	298	283	292	297	6919
			22	315	338	335	337	337	332	312	313	327	322	316	299	22	298	300	299	297	283	277	278	260	275	273	282	288	7293
			23	292	295	306	298	302	372	363	324	306	267	242	291	23	301	299	292	282	278	265	268	278	269	257	269	282	6998
			24	299	328	320	337	328	335	337	322	318	297	288	283	24	277	274	263	267	268	276	267	252	250	248	261	272	6967
			25	292	311	349	366	362	360	298	291	298	300	297	288	25	289	289	298	302	302	302	300	292	280	277	282	289	7314
			26	288	279	279	288	286	301	318	323	302	289	327	307	26	272	262	243	220	217	226	250	189	209	262	286	347	6572
			27	417	283	276	322	338	346	336	329	318	295	308	302	27	317	282	343	331	249	240	236	242	262	262	272	292	7218
			28	290	338	393	398	318	295	295	293	292	293	290	290	28	297	302	307	297	288	292	296	285	279	278	268	267	7241
			29	257	275	268	311	294	293	283	283	302	209	249	341	29	351	369	373	404	426	256	220	274	268	288	298	305	7219
			30	331	355	334	318	309	324	308	316	318	287	265	282	30	288	329	292	202	247	279	285	260	269	285	297	298	7078
			31	300	306	302	312	310	319	300	300	299	296	305	307	31	303	306	309	313	318	309	295	289	288	279	279	291	7235
			MONTHLY SUM																										216431
			MONTHLY MEAN																										291

SCALED BY	SPT, PEF
CHECKED BY	JEP, SPT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated

[ ] Significant portion of hour interpolated.

[ ] No record; or no values available because of faulty record.

[ ] Scaling uncertain because of magnetic storm.

< > Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

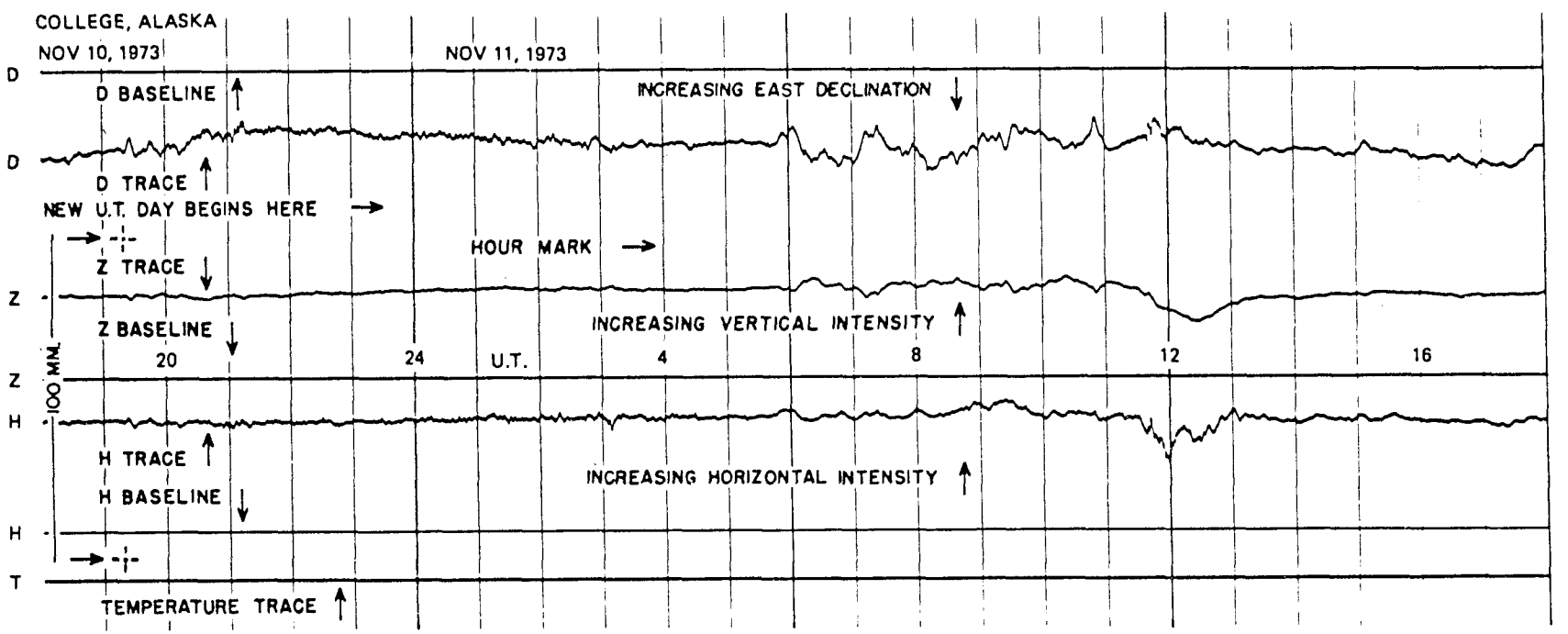
* Derived from Glorm Mgph., converted to Normal Mgph.

DATES WITH GAPS:

☆ U.S. G.P.O. 1973-769-571/932 REG. #6

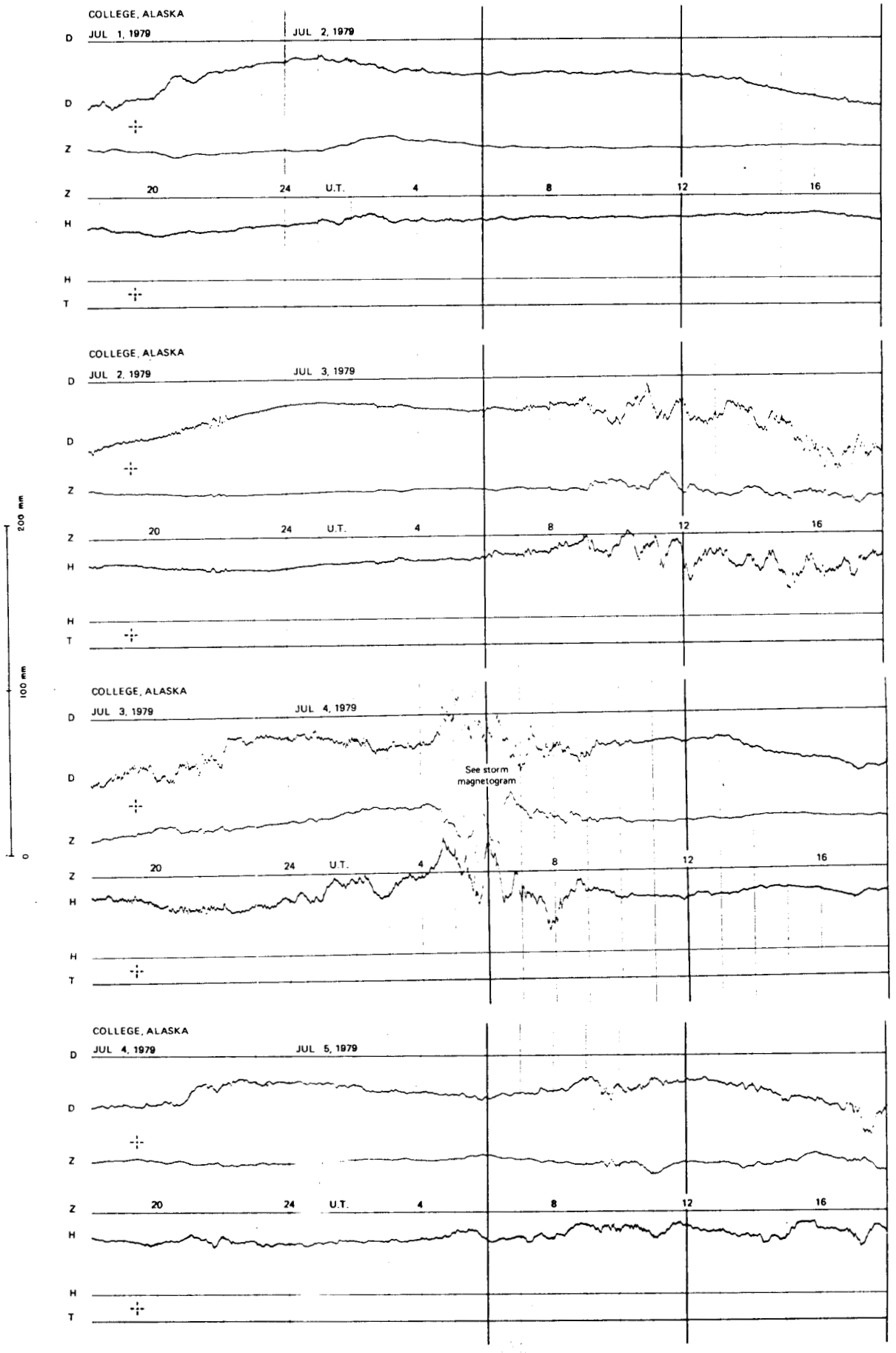
FORMAT FOR NORMAL & STORM MAGNETOGRAMS

(SAMPLE ONLY)

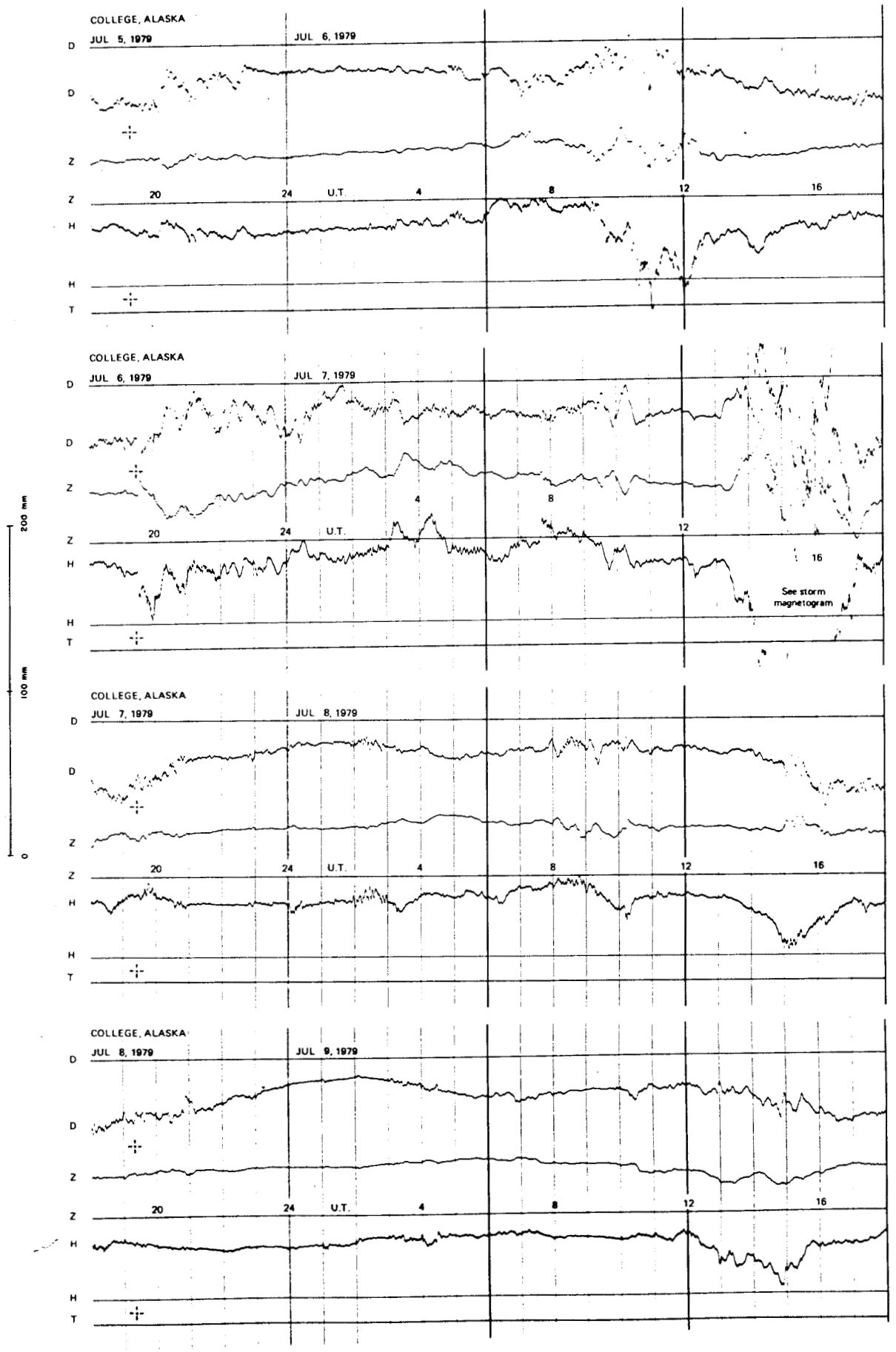


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS

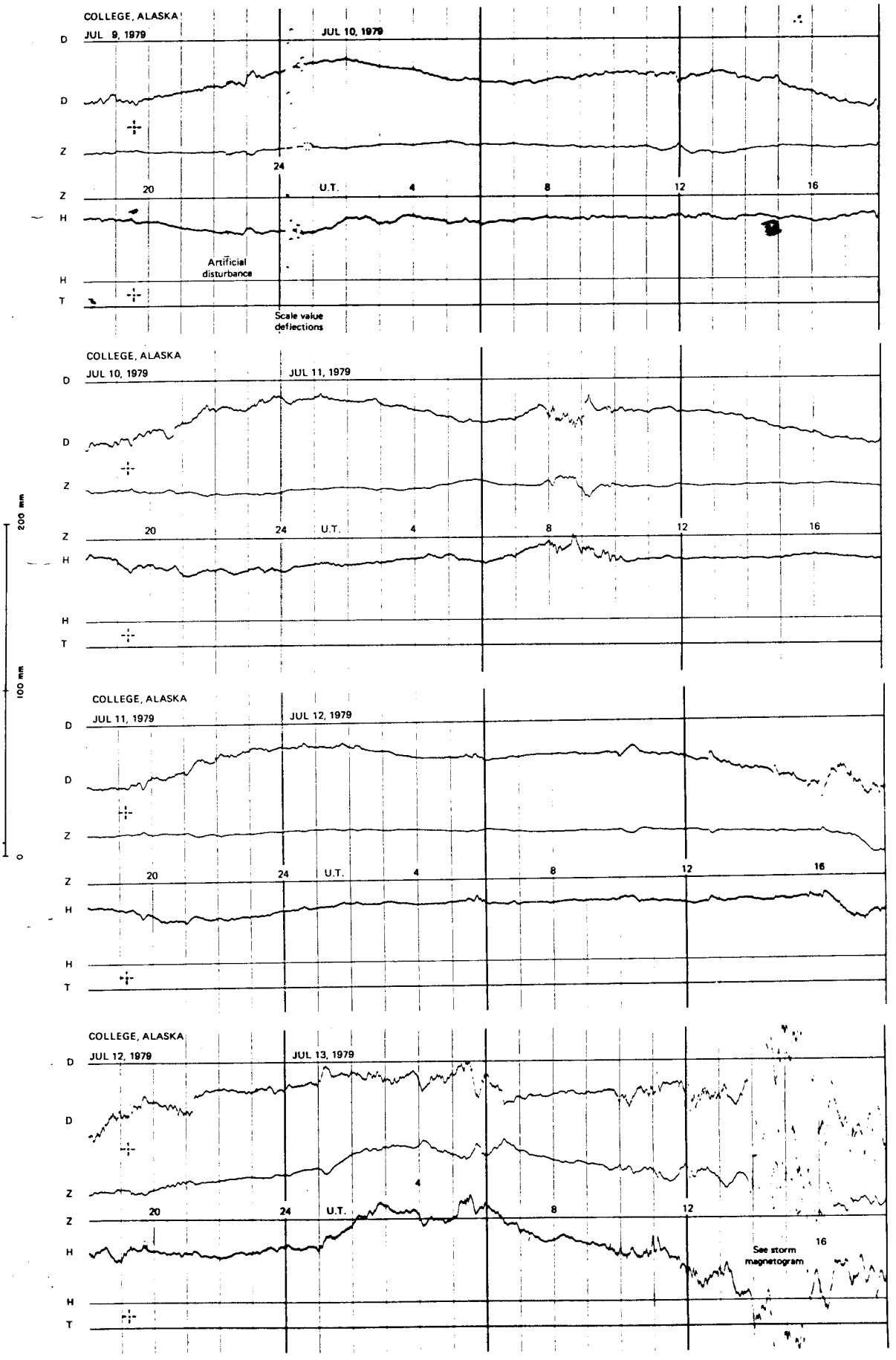


200 mm

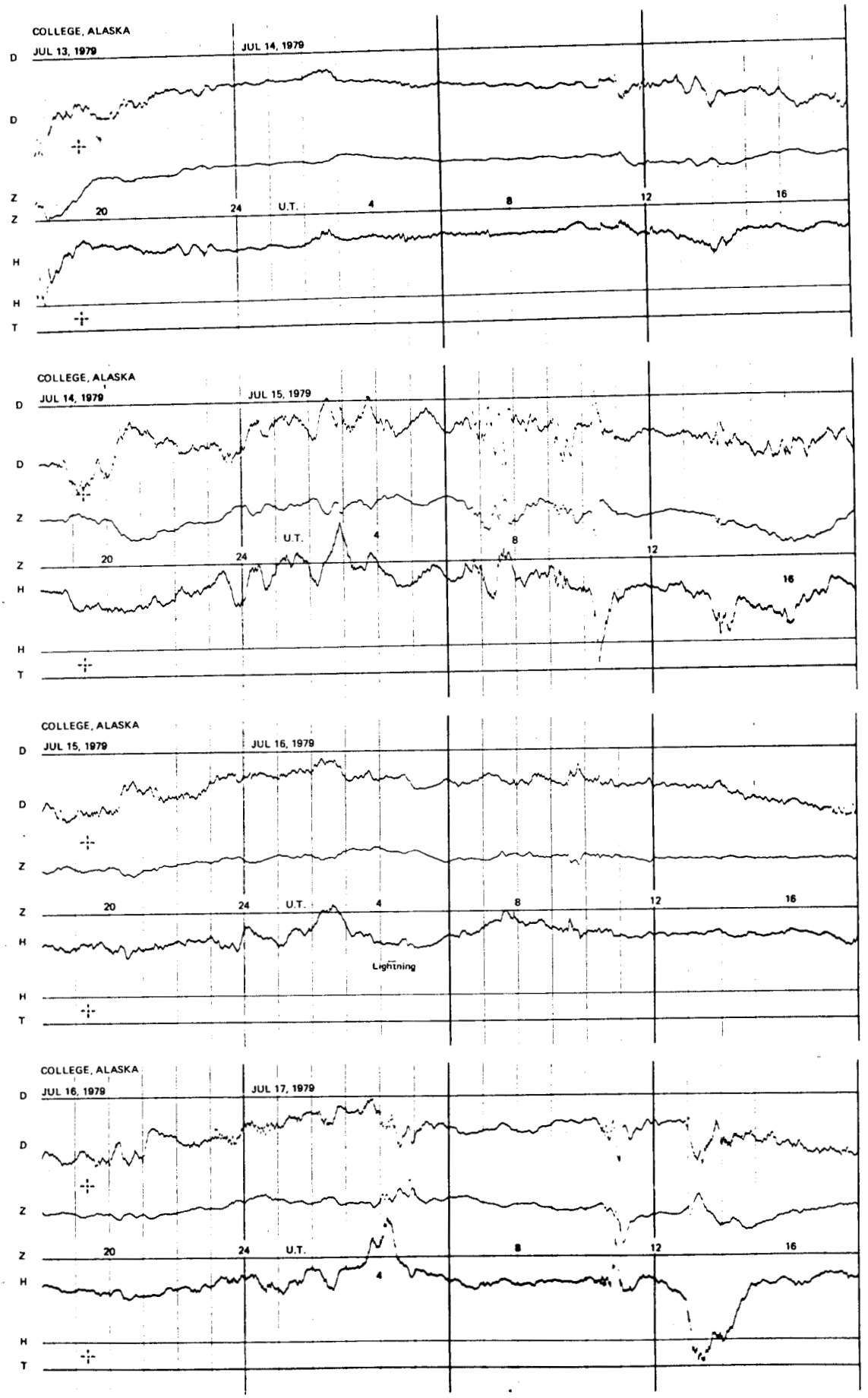
100 mm

0

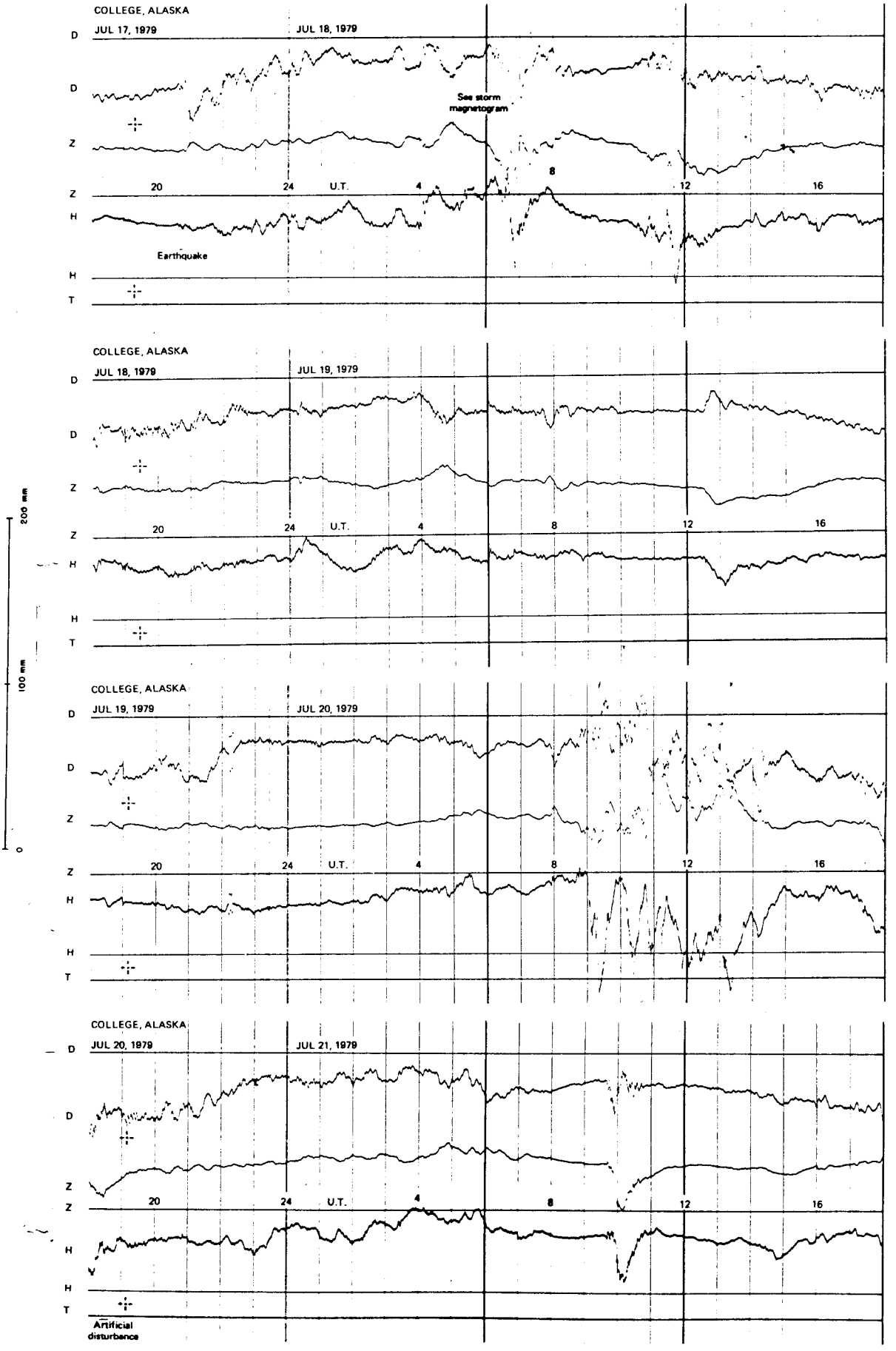
NORMAL MAGNETOGRAMS



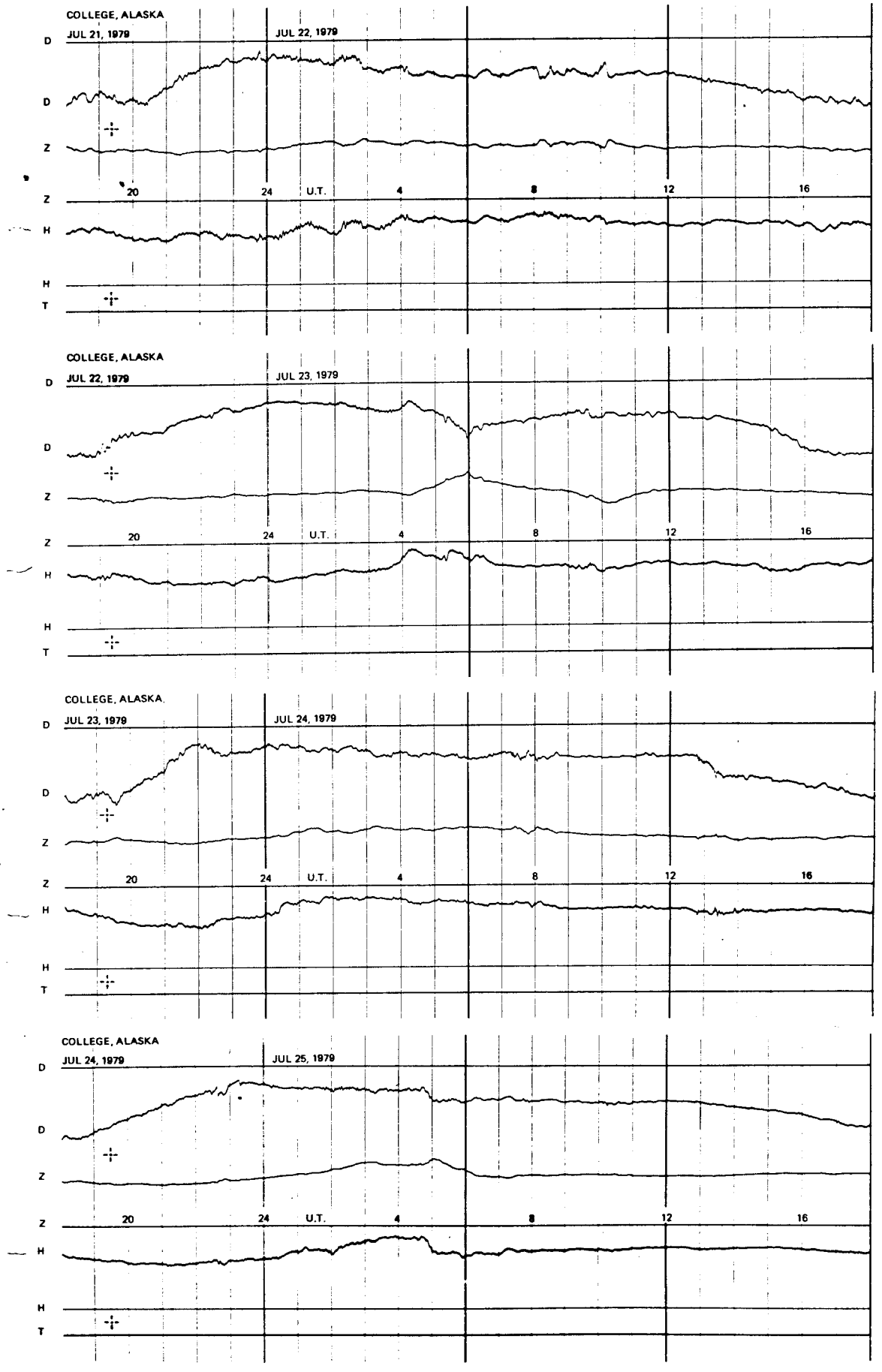
NORMAL MAGNETOGRAMS



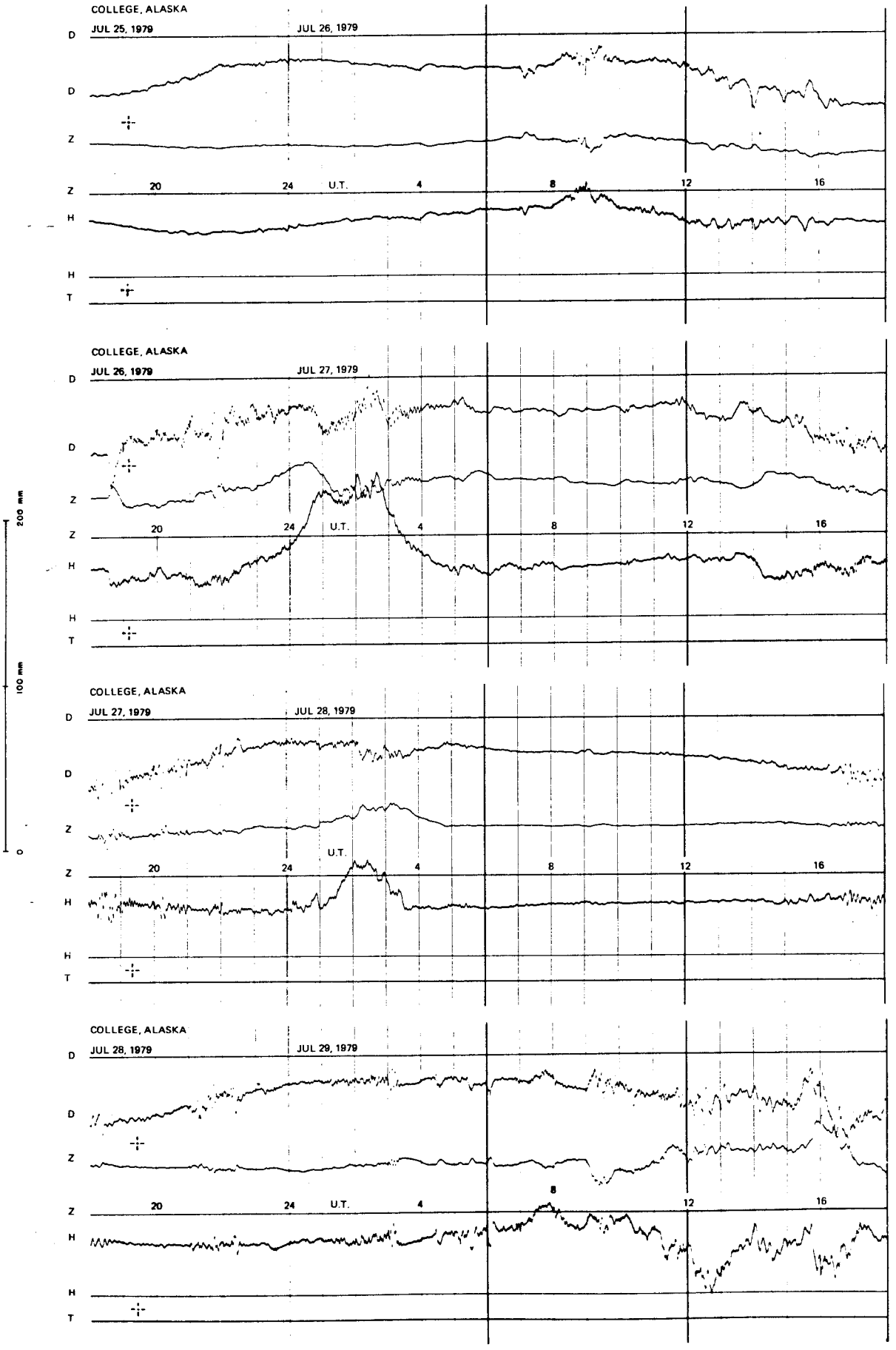
NORMAL MAGNETOGRAMS



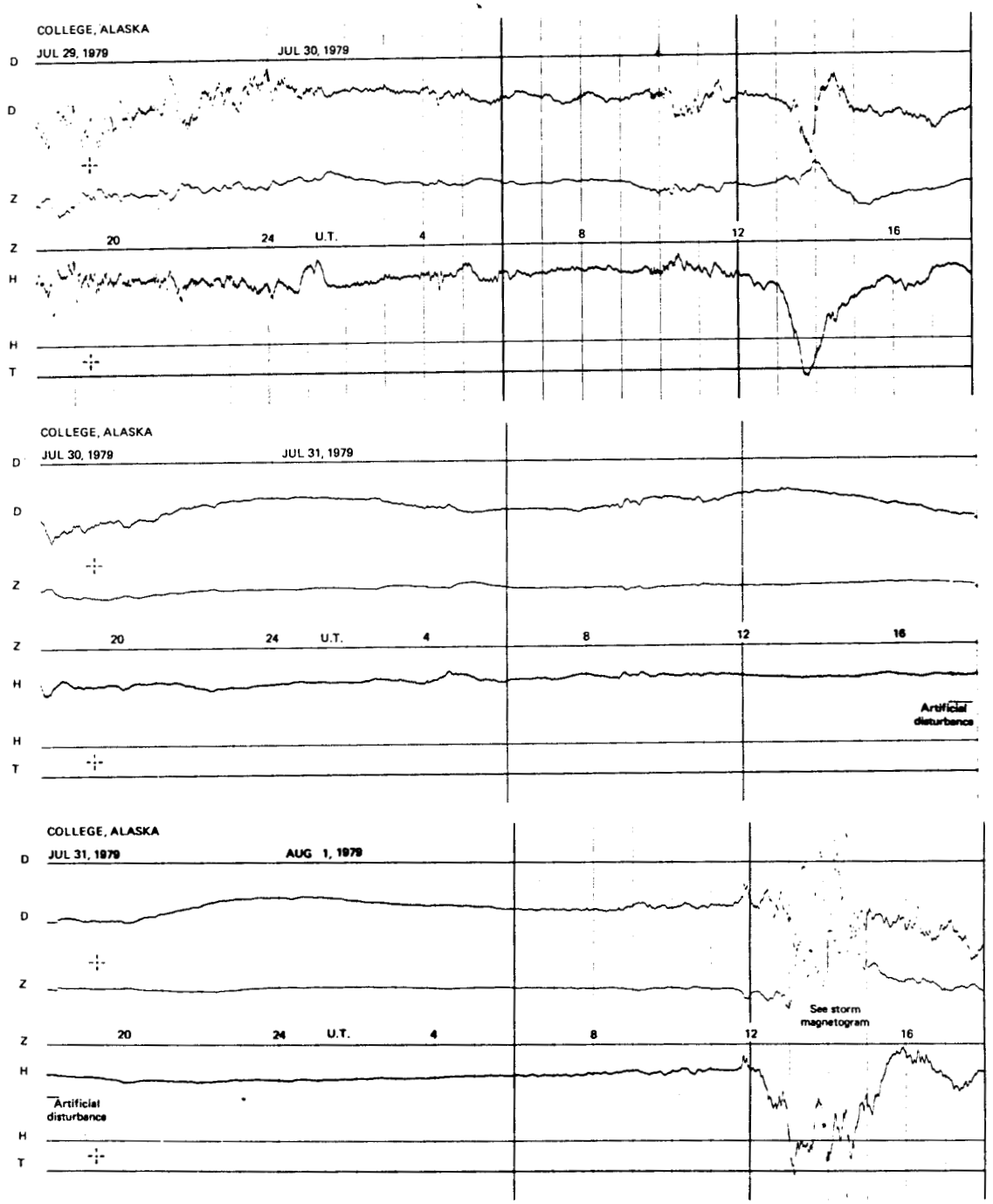
NORMAL MAGNETOGRAMS



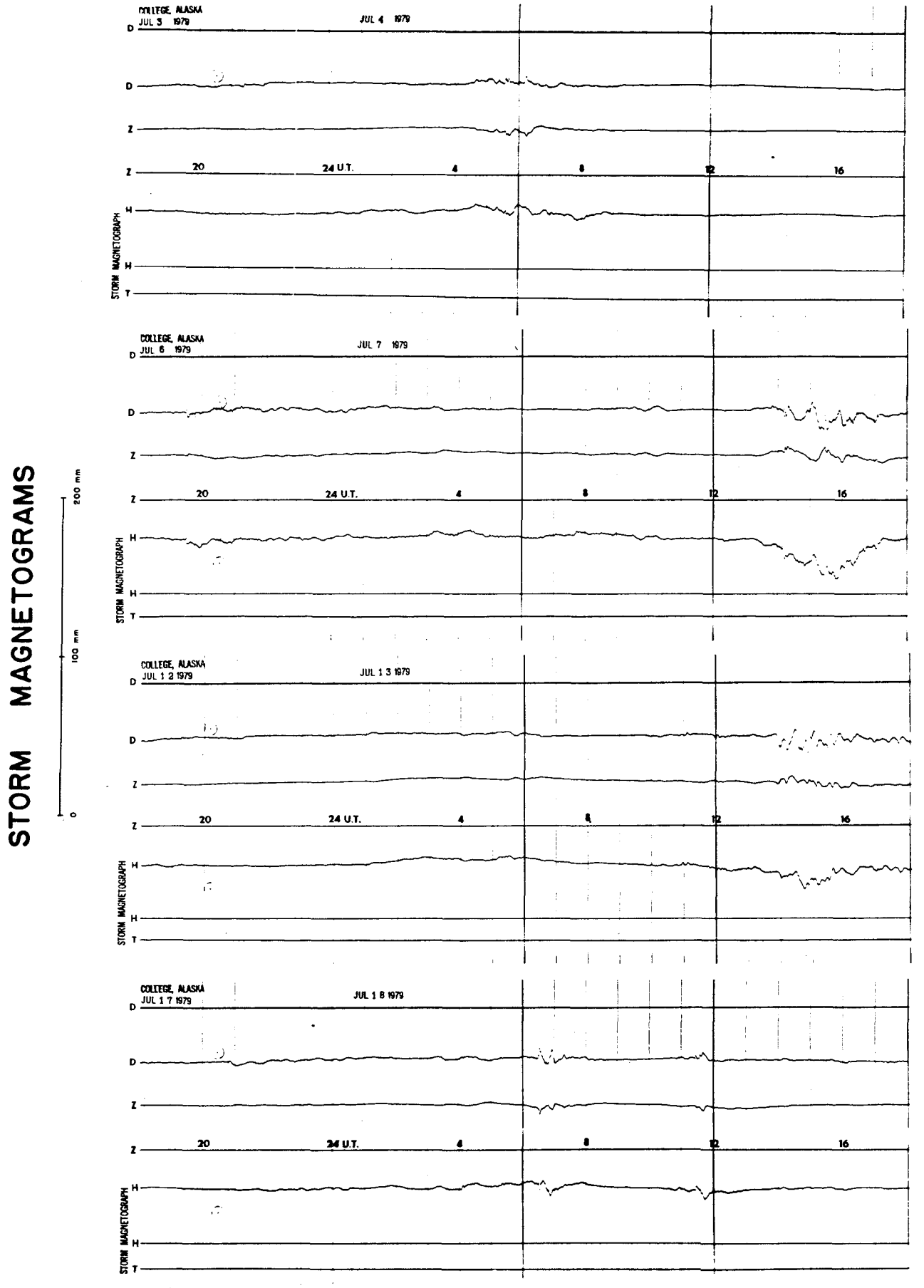
NORMAL MAGNETOGRAMS



NORMAL MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS